Influenza Immunization Program 2024-2025

September 2024

Alberta Health Services

Introduction

Upon completion of this presentation the learner will understand the clinical information for the fall 2024 Influenza Immunization Program.

Operational questions will NOT be addressed during this presentation (e.g., vaccine distribution specifics).

Always use the online resources for the most up to date information.

Introduction (continued)

For more detailed information it is important for providers to refer to other program resources found on the Alberta Health Services (AHS) Influenza Immunization webpage such as:

- AHS Vaccine Biological pages and/or Vaccine Product Monographs
- AHS Vaccine Storage and Handling e-learning modules and Standard
- Guidelines for the reporting of Adverse Events Following Immunization (AEFI)
- Vaccine Administration
- Reporting requirements and data collection guidelines
- Alberta Immunization Policy: Alberta Outreach Immunization Program

What is influenza?

Influenza, commonly known as “the flu”, is a highly contagious infection of the airways caused by influenza viruses. It is often referred to as “seasonal” influenza because these viruses circulate annually in the winter season in the northern hemisphere.

The timing and duration of influenza season varies – in Canada influenza activity begins to increase over the fall and peaks in the winter months. Outbreaks can happen as early as September, but typically start in October with most activity peaking in January or later. Late season outbreaks occurring in April and even May have also been reported. The influenza season in Canada can last from a few weeks to many months, and more than one influenza strain typically circulates each season.

A, B, C and D influenza viruses

- Influenza A and B viruses cause seasonal epidemics, while type C viruses cause mild respiratory illness. D viruses affect cattle and may spillover to other animals.
- Influenza A viruses are classified into different strains or subtypes based on two proteins or antigens on the virus surface: hemagglutinin (H) and neuraminidase (N)
  - e.g., H1N1 and H3N2
- Influenza B viruses can be classified into two antigenically distinct lineages: Yamagata and Victoria like viruses.
- The vaccine does not protect against influenza C and D viruses.

How strains change each year

- Small changes in influenza viruses occur continually
  - New virus strains may not be recognized by the body's existing influenza antibodies within the immune system
- A person infected with a specific influenza virus strain develops antibodies against that specific strain
- In most years, some or all the virus strains in the influenza vaccine are updated based on a review by the World Health Organization (WHO) to align with the changes in the circulating influenza viruses
- Annual influenza immunization is recommended to protect against infection from these changing influenza viruses

Signs and symptoms of influenza

- Sudden onset
- Typically starts with a headache, chills and cough, followed rapidly by fever, loss of appetite, muscle aches and fatigue, runny nose, sneezing, watery eyes and throat irritation
- Nausea, vomiting and diarrhea may also occur, especially in children
- Fever may not be prominent in children under 5 years of age and adults 65 years of age and older

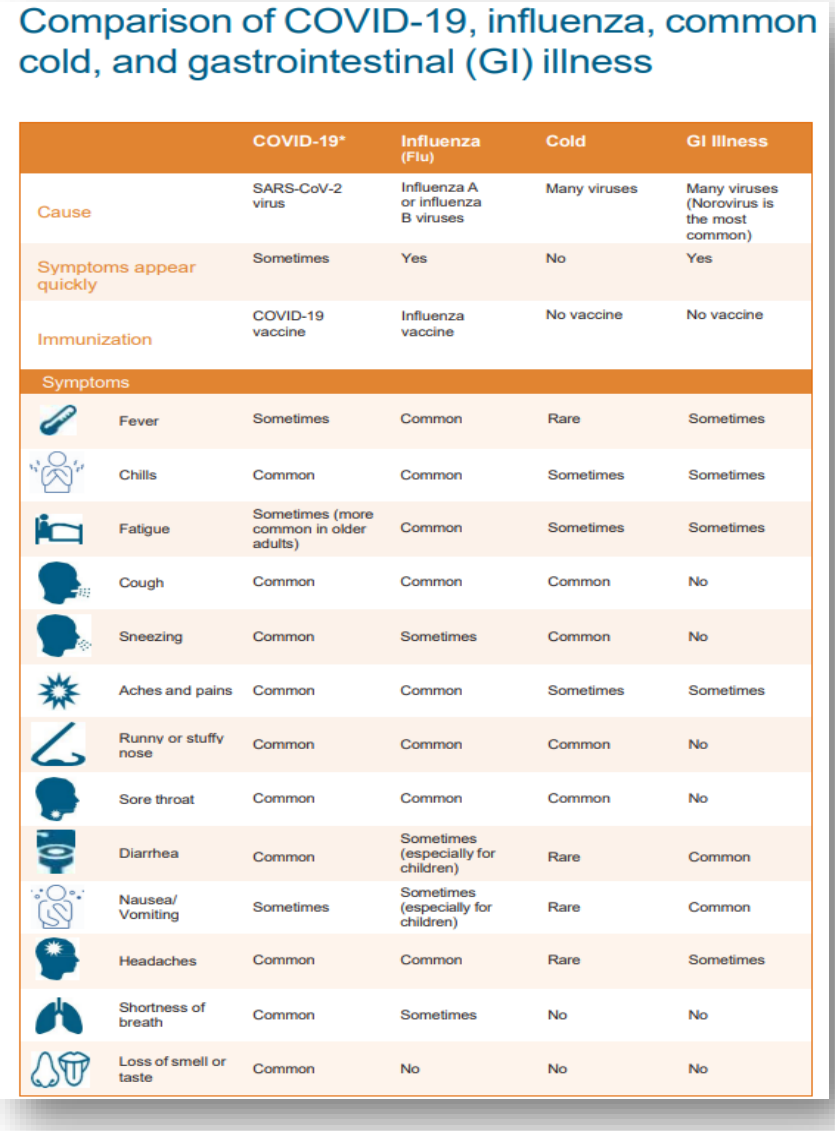
Note: Influenza is a respiratory disease.

"Stomach Flu" can be caused by many different viruses, bacteria, or even parasites.

Comparison table

Access AHS Comparison of COVID-19, influenza, common cold, and gastrointestinal (GI) illness poster at:

https://www.albertahealthservices.ca/assets/info/ppih/if-ppih-covid-19-flu-cold.pdf



Comparison of COVID-19, influenza, common cold, and gastrointestinal (GI) illness

	COVID-19*	Influenza (Flu)	Cold	GI Illness
Cause	SARS-CoV-2 virus	Influenza A or influenza B viruses	Many viruses	Many viruses (Norovirus is the most common)
Symptoms appear quickly	Sometimes	Yes	No	Yes
Immunization	COVID-19 vaccine	Influenza vaccine	No vaccine	No vaccine
Symptoms				
Fever	Sometimes	Common	Rare	Sometimes
Chills	Common	Common	Sometimes	Sometimes
Fatigue	Sometimes (more common in older adults)	Common	Sometimes	Sometimes
Cough	Common	Common	Common	No
Sneezing	Common	Sometimes	Common	No
Aches and pains	Common	Common	Sometimes	Sometimes
Runny or stuffy nose	Common	Common	Common	No
Sore throat	Common	Common	Common	No
Diarrhea	Common	Sometimes (especially for children)	Rare	Common
Nausea/ Vomiting	Sometimes	Sometimes (especially for children)	Rare	Common
Headaches	Common	Common	Rare	Sometimes
Shortness of breath	Common	Sometimes	No	No
Loss of smell or taste	Common	No	No	No

How serious is influenza?

While the majority of those who become ill will recover within a week or 10 days, it is estimated that influenza causes about 12,200 hospitalizations and 3,500 deaths in Canada each year. Influenza is among the top ten leading causes of death in Canada.

Some individuals are at higher risk of developing complications from influenza, including:

- Residents of Continuing Care and Supportive Living facilities
- Seniors
- Infants and young children
- Adults and children with existing chronic health conditions
- Pregnant women
- Indigenous peoples

Complications can include pneumonia (bacterial and viral), ear and sinus infections, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes.

Influenza Infectivity?

- The virus is spread mainly from person to person when those with influenza cough or sneeze (droplet spread)
- People may also become infected by touching an object or a surface that has the influenza virus on it and then touching their mouth, eyes or nose
- Individuals with influenza are infectious 1 day before symptoms develop and up to 4 days after becoming ill
- The period when an infected person is contagious depends on the age and health of the person
  - Young children and people with weakened immune systems may be contagious for longer than a week
  - The time period from exposure to development of symptoms is about 1 to 3 days, with an average of about 2 days

Health Care Workers

- Health care workers (HCWs) who have direct patient or client contact should consider it an essential component of the standard of care to receive influenza immunization to protect themselves and their patients.
  - Annual influenza immunization should be considered part of their responsibility to provide the highest standard of care.
- Four cluster randomized controlled trials done in long-term care settings demonstrated that influenza immunization of HCWs is associated with substantial decreases in influenza like illness and all cause mortality in the residents.

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Influenza vaccine development

- Each February, the World Health Organization (WHO) provides a recommendation on the strains to be included in the influenza vaccine for the northern hemisphere
- Two influenza "A" viruses and one (trivalent vaccine) or two (quadrivalent vaccine) influenza "B" viruses are selected based on the characteristics of the current circulating influenza virus strains
- A new vaccine is reformulated each year to protect against new influenza infections
- Each vaccine lot is tested on healthy individuals to ensure the vaccine is safe and effective

Influenza vaccine development (continued)

- There is currently one trivalent inactivated influenza vaccine (IIV3) licensed for use in Canada; it is adjuvanted

- There are currently eight quadrivalent influenza vaccines licensed for use in Canada
  - Five are quadrivalent inactivated influenza vaccines (IIV4)
  - One is a live attenuated influenza vaccine (LAIV4)
  - One is a recombinant protein vaccine (RIV4)
  - One is a subunit cell culture vaccine(IIV4-cc)

Influenza vaccine development (continued)

For the 2024-2025 influenza immunization program:

- Quadrivalent inactivated influenza vaccine is the provincially funded vaccine available to Albertans 6 months of age and older (operationally, this vaccine will be offered to individuals up to and including 64 years of age):
    - Fluzone or FluLaval Tetra or Flucelvax Quad

- High-dose quadrivalent inactivated vaccine will be available to individuals who are 65 years of age and older and adults 18 years of age and older who are hematopoietic stem cell transplant (HSCT) recipients, CAR-T-cell therapy recipients or solid organ transplant (SOT) candidates or recipients:
    - Fluzone High-Dose

High-Dose Quadrivalent Vaccine - Fluzone High-Dose

When Fluzone High-Dose is not available for eligible populations when they present to an influenza immunization clinic:

- Advise that Fluzone High Dose is available, and the client can access it through another provider
- If the client is not wanting to access Fluzone High-Dose from another provider, an alternate quadrivalent vaccine may be offered

Vaccine strains for 2024-2025

The strains that will be included in the 2024-2025 influenza vaccine for the northern hemisphere are:

Egg-based influenza vaccines (Fluzone Quadrivalent, Flulaval Tetra and Fluzone High-Dose Quadrivalent)	Cell-cultured influenza vaccine (Flucelvax Quad)
• A/Victoria/4897/2022 (H1N1)pdm09 • A/Thailand/8/2022 (H3N2) • B/Austria/1359417/2021 (B/Victoria lineage) • B/Phuket/3073/2013 (B/Yamagata lineage)	• A/Wisconsin/67/2022 (H1N1)pdm09 • A/Massachusetts/18/2022 (H3N2) • B/Austria/1359417/2021 (B/Victoria lineage) • B/Phuket/3073/2013 (B/Yamagata lineage)

Vaccine producers may use antigenically equivalent strains because of their growth properties. The strains recommended for egg-based products may differ somewhat from the strains chosen for cell-culture based products to account for differences in the production platforms

Facts about inactivated influenza vaccine

- An inactivated (killed) vaccine cannot cause influenza disease in the vaccine recipient
- The virus is grown in hens' eggs (egg-based) or mammalian cells (cell-cultured), inactivated, broken apart and highly purified
- In addition to the antigen, the Fluzone, FluLaval Tetra and Flucelvax Quad vaccine may contain:
  - Thimerosal (preservative in multi-dose vials)
  - Trace residual amounts of egg proteins, formaldehyde, sodium phosphate-buffered isotonic sodium chloride solution, Triton X-100, sodium deoxycholate, ethanol, sucrose, α-tocopheryl hydrogen succinate and polysorbate 80
- Check the product monograph as ingredients vary with specific inactivated influenza vaccines

Universal Influenza Immunization Program in Alberta

The 2024-2025 Influenza Immunization Program will:

- Continue to be offered universally in Alberta to all people 6 months of age and older who live, work, go to school or are visiting in Alberta at no charge.
- Focus on increasing influenza immunization rates for the following groups, many of whom are most at risk for morbidity and mortality due to influenza disease:
  - Residents and staff in Congregate Care and Supportive Living facilities
  - Homebound clients
  - Individuals with unstable housing or who are marginalized
  - Health Care Workers

Individuals with booked public health immunization appointments will be offered influenza vaccine starting in early October.

Program will begin in October.

Provincially funded influenza vaccines for 2024-2025

	Fluzone (Sanofi Pasteur)	FluLaval Tetra (GlaxoSmithKline)	Flucelvax Quad (Seqirus UK Limited)
Dosage/Route	0.5 mL/IM	0.5 mL/IM	0.5mL/IM
Packaging	Single Dose: Pre-filled, single dose syringe (luer lock needles not included) Multi-dose: 5 mL	Multi-dose: 5 mL	Single dose pre-filled syringe (needle not included)
Eligibility	Individuals who live, work, go to school or are visiting in Alberta	Individuals who live, work, go to school or are visiting in Alberta	Individuals who live, work, go to school or are visiting in Alberta
Indication	6 months[1] of age and older	6 months[1] of age and older	6 months[1] of age and older
Non- Medicinal Ingredients[2]	formaldehyde, sodium phosphate buffered isotonic sodium chloride solution, Triton X-100, propagated in embryonated chicken eggs. Thimerosal free (single dose formulation only).	egg proteins, sodium deoxycholate, ethanol, formaldehyde, sucrose, α-tocopheryl hydrogen succinate, polysorbate 80, thimerosal.	disodium phosphate dihydrate, magnesium chloride hexahydrate, potassium chloride, potassium dihydrogen phosphate, sodium chloride, thimerosal, beta-propiolactone, cetyltrimethylammonium bromide, polysorbate 80
Schedule	1 or 2 doses[3]	1 or 2 doses[3]	1 or 2 doses[3]

[1]Children must be 6 calendar months of age; do not compress this age by using 28-day months
[2]Refer to vaccine product monograph for a complete listing of the ingredients
[3]Children less than 9 years of age require 2 doses given at a minimum of 4 weeks apart if they have never received seasonal influenza vaccine.

Provincially funded influenza vaccines cont'd

	Fluzone High-Dose (Sanofi Pasteur)
Dosage/Route	0.7 mL/IM
Packaging	Single Dose: Pre-filled, single dose syringe (luer lock needles not included)
Eligibility	Individuals who live, work, go to school or are visiting in Alberta
Indication	65 years of age and older and adults 18 years of age and older, including pregnant individuals, who are hematopoietic stem cell transplant (HSCT) recipients, CAR T-call therapy recipients or solid organ transplant (SOT) candidates or recipients
Ingredients[1]	formaldehyde, egg protein, sodium phosphate buffered isotonic sodium chloride solution, Triton X-100. Thimerosal free.
Schedule	1 dose

[1]Refer to vaccine product monograph for a complete listing of the ingredients

Influenza vaccine dosing for specific ages

6 months up to & including 8 years of age

- 2 doses if never previously immunized with seasonal influenza vaccine (spaced 4 weeks apart – minimum interval)
- 1 dose only if previously immunized with seasonal influenza vaccine

9 years of age and older

- 1 dose

Note :

- CAR T-cell therapy recipients without a prior history of HSCT who received influenza vaccine pre-CAR T-cell therapy are eligible to restart their influenza vaccine series, beginning at least 3 months post-CAR T-cell therapy. Consultation with their physician is not necessary as long as a clearance letter has been received to proceed with inactivated vaccines.
- For HSCT recipients who had their post-HSCT vaccine series interrupted by CAR T-cell therapy, see the following HSCT guidance: Principles of Immunization in Hematopoietic Stem Cell Transplant Recipients and Solid Organ Transplant Recipients
  - Immunization for Adult HSCT Recipients
  - Immunization for Child HSCT Recipients

Return visit for children who need a second dose

- Indicate date to return for second dose of vaccine on the Influenza Client Immunization Record and Care After Immunization form and provide to the parent or guardian of the client
- Refer to zone process for indicating location for second dose of vaccine

Co-administration with other vaccines

- For co-administration with COVID-19 vaccines, refer to the "Administration With Other Products" section in the relevant COVID-19 vaccine biological page.
- Influenza vaccine can be administered with all other inactivated and live vaccines.

Thimerosal

- Multi-dose vials of vaccine contain a preservative called thimerosal (ethylmercury)
- Ethylmercury is not the same compound as methylmercury
  - Methylmercury is a known neurotoxin in high concentrations or with prolonged exposure (e.g., ingesting some types of fish)
- Ethylmercury is eliminated much more quickly and is less likely to reach toxic levels in the blood than methylmercury
- Studies have found there is no association between immunization with thimerosal-containing vaccines and neurodevelopmental outcomes, including autism-spectrum disorders
- Additional information regarding thimerosal is available at http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/07vol33/acs-06/index-eng.php

This statement has been archived by NACI, as it is not being updated. The information remains relevant.

Pregnancy and breastfeeding

"NACI recommends the inclusion of all pregnant women, at any stage of pregnancy… [among high priority recipients of influenza vaccine] due to:

- *the risk of influenza associated morbidity in pregnant women*
- *evidence of adverse neonatal outcomes associated with maternal respiratory hospitalization or influenza during pregnancy*
- *evidence that vaccination of pregnant women protects their newborns from influenza and influenza-related hospitalization, and*
- *evidence that infants born during influenza season to vaccinated women are less likely to be premature, small for gestational age, and low birth weight."*

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Pregnancy and breastfeeding (cont'd)

Despite a lack of available evidence for use in pregnant individuals, Alberta transplant experts recommend that high-dose influenza vaccine be offered to pregnant individuals who are:

- Hematopoietic stem cell transplant (HSCT) recipients;
- CAR T-cell therapy recipients; or
- Solid organ transplant (SOT) candidates or recipients.

Pregnant SOT, HSCT and/or CAR T-cell candidates or recipients may wish to discuss the risks and benefits with their specialist.

Pregnancy and breastfeeding (cont'd)

- Inactivated influenza vaccines are safe for pregnant women at **all** stages of pregnancy
- Inactivated influenza vaccines are safe for breastfeeding mothers

Influenza Burden in Pediatric Population

- Influenza is a leading cause of respiratory infection among children under age 1 year and causes approximately 280,000 respiratory hospitalizations globally in those under 6 months old.
- In Canada, a national active surveillance study of pediatric influenza admissions revealed that infants under 6 months old accounted for 13.5% of children under 16 years of age admitted for influenza during 2010-2011 to 2020-2021, emphasizing the significant burden of influenza and its associated complications for this age.

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Reactions to influenza vaccine

	Fluzone, Fluzone High Dose, Flulaval Tetra, Flucelvax Quad
Common	• Injection site pain, tenderness, redness, swelling • Irritability, abnormal crying, shivering • Malaise, anorexia, myalgia, headache, fever • Gastrointestinal symptoms, arthralgia
Uncommon	• Lymphadenopathy, rash • Pruritus, bruising, haemorrhage, warmth and induration at injection site • Dizziness, vertigo • Cough, runny nose, sneezing and sore throat • Otitis media, nasopharyngitis • Nausea, diarrhea
Rare	• Guillain-Barré Syndrome (GBS) • Oculorespiratory Syndrome (ORS) • Urticaria, flushing, pain in extremity • Anaphylaxis • Allergic reaction

Guillain-Barré Syndrome (GBS)

- GBS is an illness that affects the nervous system
  - It is rare; general risk is about 2 cases per 100,000 person years
  - It is characterized by loss of reflexes and symmetric paralysis usually beginning in the legs
  - It results in complete or near complete recovery in most cases
- It is thought that GBS may be triggered by an infection
  - The infection that most commonly precedes GBS is caused by *Campylobacter jejuni* bacteria
  - Other respiratory or intestinal illnesses and other triggers may also precede an episode of GBS, including Cytomegalovirus, Epstein-Barr virus and *Mycoplasma pneumoniae*

Guillain-Barré Syndrome (GBS) (continued)

- In 1976, the "swine flu" vaccine was associated with an increased risk of GBS – this has not been found with influenza vaccines administered after the swine influenza vaccine program according to the US Institute of Medicine
- Absolute risk of GBS after immunization is about 1 excess case per 1 million vaccinees above background rate of 10 - 20 cases/million
- Risk of GBS associated with **influenza infection** is much greater than that associated with immunization

It is recommended that, as a precaution, you DO NOT provide influenza immunization to people who have been diagnosed with GBS within 6 weeks of previous influenza immunization.

Oculorespiratory Syndrome (ORS)

In 2000-2001, Health Canada received increased reports of unusual symptoms following influenza immunization. These symptoms were subsequently described as *Oculorespiratory Syndrome (ORS).*

Case definition of ORS (**onset within 24 hours of immunization**)

- bilateral red eyes

and

- one or more of the following respiratory symptoms (cough, wheeze, chest tightness, difficulty breathing, difficulty swallowing, hoarseness, sore throat) **with or without** facial swelling

Oculorespiratory Syndrome (ORS) (continued)

Individuals who have experienced ORS without lower respiratory tract symptoms can be reimmunized with influenza vaccine.

Individuals who experienced ORS with lower respiratory tract symptoms (wheeze, chest tightness, difficulty breathing) should be assessed by a MOH/MOH designate before proceeding with immunization.

Contraindications to influenza vaccine

Inactivated influenza vaccine SHOULD NOT be administered to individuals who:

- Are less than 6 calendar months of age
- Have had an anaphylactic reaction to a previous dose of influenza vaccine
- Have a known hypersensitivity to any component of the vaccine with the exception of egg
- Have been diagnosed with GBS within 6 weeks of a previous dose of influenza vaccine
- Have experienced ORS involving lower respiratory tract symptoms within 24 hours of receiving influenza immunization – these individuals should be assessed by the MOH further prior to immunizing

Egg-allergic individuals

- Egg allergy is not considered a contraindication for influenza vaccine.
- Egg-allergic individuals may be immunized without a prior influenza vaccine skin test and with the full dose of vaccine, irrespective of a past severe reaction to egg.

Vaccine deferral

Vaccine may be deferred until later in the following situations:

- Individuals presenting with a serious acute febrile illness
  - Recommendations should be provided for these individuals to be immunized when their symptoms have resolved.

Vaccine does not require deferral and can safely be given to the following individuals:

- Those with mild acute illness, with or without fever
- Individuals who are recovering from illness or are taking antibiotics

Commitment to Comfort

Needle Fears

- This can affect people to a degree that they avoid immunization

Alberta Health Services Commitment to Comfort outlines five principles to improve the immunization experience, health outcomes and satisfaction and encourage repeat attendance to healthcare encounters.

- Make a comfort plan
- Use positive language
- Use comfort positions
- Shift attention
- Use numbing cream

AEFI Reporting

An adverse event following immunization is defined as a serious or unexpected event temporally associated with immunization.

Local reactions are the most reported event following immunization. A local reaction of pain and/or swelling is ONLY reportable if:

1. the onset of swelling is within 48 hours following immunization;

AND

2. swelling extends past the nearest joint

OR

3. severe pain that interferes with the normal use of the limb lasting greater than 4 days

OR

4. reaction requires hospitalization

AEFI reporting (continued)

Any of the following are also reportable adverse events:

- GBS
- ORS
- Anaphylaxis
- Other allergic reactions
- Any reaction outside of what is expected

Consult with AHS Adverse Event Following Immunization (AEFI) Team at AEFI@ahs.ca or 1-855-444-2324 as soon as possible for any case when there is uncertainty as to whether a symptom following immunization is related to the immunization.

Severe reactions (anaphylaxis and death) should be reported within 24 hours and all other reactions within 3 days to the AEFI Team. “Reportable AEFIs” are reported to Alberta Health, and in turn to the National Surveillance Program.

Anaphylaxis

Alberta Health Services employees need to ensure they have completed the Anaphylaxis Management | Insite (albertahealthservices.ca) learning module.

Covenant Health employees need to ensure they have completed Covenant Health Anaphylaxis Learning Module found on CLiC.

All other providers must have Anaphylaxis Management Guidelines in place.

- Additional information available in the Canadian Immunization Guide – Vaccine Safety

Infection Prevention and Control (IPC)

IPC's mandate is to reduce the incidence of healthcare associated infections in patients, residents, and clients by:

- Process and outcome surveillance
- Outbreak identification and management
- Consultation and education
- Guideline, policy, and procedure development
- Research

For more information go to the AHS IPC website at:
https://www.albertahealthservices.ca/info/page6410.aspx

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QUESTIONS & THANKS

Email **CDCIMM@ahs.ca** or call 1-855-444-2324

Alberta Health Services